

Amendments to the Claims

1. **(Currently Amended)** An optical/electrical converting device for connecting an optical data transmission system, which includes a plurality ~~is composed~~ of apparatuses performing data communication by an optical signal, and an electrical data transmission system, which includes a plurality ~~is composed~~ of apparatuses performing data communication by an electrical signal, and performing data communication between the optical data transmission system and the electrical data transmission system ~~systems~~, the device comprising:

a clock supplying unit for supplying a clock synchronized with a selected reference clock, the selection being between a first a reference clock from the optical data transmission system and a second reference clock from the electrical data transmission system, wherein the selection is determined based on which of the optical data transmission system and the electrical data transmission system includes which is held by a designated master apparatus ~~included in either system~~;

an electrical signal transmitting unit for ~~inputting a binary~~receiving an optical digital signal from the optical data transmission system, converting the optical signal into a multi-level electrical ~~analog~~ signal synchronized with the clock supplied from the clock supplying unit, and outputting the electrical signal to the electrical data transmission system; and

an electrical signal receiving unit for ~~inputting~~receiving a multi-level electrical ~~analog~~ signal from the electrical data transmission system, converting the electrical signal into a ~~binary~~ an optical digital signal synchronized with the clock supplied from the clock supplying unit, and outputting the optical signal to the optical data transmission system.

2. **(Currently Amended)** The optical/electrical converting device according to claim 1, wherein the clock supplying unit includes:

a first clock recovery unit for recovering a the first reference clock based on an optical signal input from the optical data transmission system;

a second clock recovery unit for recovering a the second reference clock on an electrical signal input from the electrical data transmission system; and

a clock selecting unit for selecting a the first reference clock recovered by the first clock recovery unit if the master apparatus generating a the first reference clock is included in

the optical data transmission system, and selecting a the second reference clock recovered by the second clock recovery unit if the master apparatus generating a the second reference clock is included in the electrical data transmission system, and

the electrical signal transmitting unit converts the optical signal input from the optical data transmission system into an electrical signal synchronized with the reference clock selected by the clock selecting unit.

3. **(Currently Amended)** The optical/electrical converting device according to claim 1, wherein the clock supplying unit includes:

a first clock recovery unit for recovering the first reference a-clock based on an optical signal input from the optical data transmission system;

a second clock recovery unit for recovering the second reference a-clock based on an electrical signal input from the electrical data transmission system; and

a clock selecting unit for selecting the first reference a-clock recovered by the first clock recovery unit if the master apparatus generating a the first reference clock is included in the optical data transmission system, and selecting the second reference a-clock recovered by the second clock recovery unit if the master apparatus generating the second a-reference clock is included in the electrical data transmission system, and

the electrical signal transmitting unit converts the optical signal input from the optical data transmission system into an electrical signal, and replaces the clock recovered by the first clock recovery unit with the reference clock selected by the clock selecting unit while maintaining synchronization.

4. **(Currently Amended)** The optical/electrical converting device according to claim 1, wherein

the clock supplying unit includes:

a clock recovery unit for recovering the second reference a-clock based on an electrical signal input from the electrical data transmission system; and

a clock selecting unit for selecting the first reference a-clock input from an apparatus, whose clock synchronization is already established, included in the optical data transmission system, if the master apparatus generating the first a-reference clock is included in

the optical data transmission system, and selecting the second a-clock recovered by the clock recovery unit if the master apparatus generating the second a-reference clock is included in the electrical data transmission system, and

the electrical signal transmitting unit converts an optical signal input from the optical data transmission system into an electrical signal synchronized with the reference clock selected by the clock selecting unit.

5. **(Currently Amended)** ~~The optical/electrical converting device according to claim 1,~~ An optical/electrical converting device for connecting an optical data transmission system, which includes a plurality of apparatuses performing data communication by an optical signal, and an electrical data transmission system, which includes a plurality of apparatuses performing data communication by an electrical signal, and performing data communication between the optical data transmission system and the electrical data transmission system, the device comprising:

a clock supplying unit for supplying a clock synchronized with a selected reference clock, the selection being between a first reference clock and a second reference clock, and determined based on which of the optical data transmission system and the electrical data transmission system includes a designated master apparatus;

an electrical signal transmitting unit for receiving an optical digital signal from the optical data transmission system, converting the optical signal into a multi-level electrical signal synchronized with the clock supplied from the clock supplying unit, and outputting the electrical signal to the electrical data transmission system; and

an electrical signal receiving unit for receiving a multi-level electrical signal from the electrical data transmission system, converting the electrical signal into an optical digital signal synchronized with the clock supplied from the clock supplying unit, and outputting the optical signal to the optical data transmission system,

wherein the clock supplying unit includes: a clock recovery unit for recovering the second reference clock based on an electrical signal input from the electrical data transmission system; a clock generating unit for generating the first a-reference clock to which the master apparatus is locked; and a clock selecting unit for selecting the first reference a-clock generated by the clock generating unit if the master apparatus locked by the first reference clock is included

in the optical data transmission system, and selecting the second reference a-clock recovered by the clock recovery unit if the master apparatus generating the second a-reference clock is included in the electrical data transmission system, and wherein the electrical signal transmitting unit converts an optical signal input from the optical data transmission system into an electrical signal synchronized with the reference clock selected by the clock selecting unit.

6. **(Currently Amended)** The optical/electrical converting device according to claim 2, wherein

the electrical signal receiving unit

sends an electrical signal input from the electrical data transmission system to the electrical signal transmitting unit until completion of initialization of the apparatuses included in ~~composing~~ the electrical data transmission system, and

after completion of the initialization of the apparatuses included in ~~composing~~ the electrical data transmission system, converts an electrical signal input from the electrical data transmission system into an optical signal synchronized with the reference clock selected by the clock selecting unit, and outputs the optical signal to the optical data transmission system.

7. **(Currently Amended)** The optical/electrical converting device according to claim 3, wherein

the electrical signal receiving unit

sends an electrical signal input from the electrical data transmission system to the electrical signal transmitting unit until completion of initialization of the apparatuses included in ~~composing~~ the electrical data transmission system, and

after completion of the initialization of the apparatuses included in ~~composing~~ the electrical data transmission system, converts an electrical signal input from the electrical data transmission system into an optical signal synchronized with the reference clock selected by the clock selecting unit, and outputs the optical signal to the optical data transmission system.

8. **(Currently Amended)** The optical/electrical converting device according to claim 4, wherein

the electrical signal receiving unit

sends an electrical signal input from the electrical data transmission system to the electrical signal transmitting unit until completion of initialization of the apparatuses included in composing the electrical data transmission system, and

after completion of the initialization of the apparatuses included in composing the electrical data transmission system, converts an electrical signal input from the electrical data transmission system into an optical signal synchronized with the reference clock selected by the clock selecting unit, and outputs the optical signal to the optical data transmission system.

9. **(Currently Amended)** The optical/electrical converting device according to claim 5, wherein

the electrical signal receiving unit

sends an electrical signal input from the electrical data transmission system to the electrical signal transmitting unit until completion of initialization of the apparatuses included in composing the electrical data transmission system, and

after completion of the initialization of the apparatuses composing the electrical data transmission system, converts an electrical signal input from the electrical data transmission system into an optical signal synchronized with the reference clock selected by the clock selecting unit, and outputs the optical signal to the optical data transmission system.

10. **(Currently Amended)** An optical/electrical converting method for connecting an optical data transmission system, which is ~~composed~~ includes a plurality of apparatuses performing data communication by an optical signal, and an electrical data transmission system, which is ~~composed~~ includes a plurality of apparatuses performing data communication by an electrical signal, and performing data communication between the optical data transmission system and the electrical data transmission system systems, comprising the steps of:

recovering a first reference clock based on an optical signal input from the optical data transmission system ~~if a master apparatus generating a reference clock is included in the optical data transmission system;~~

recovering a second reference clock based on an electrical signal input from the electrical data transmission system ~~if a master apparatus generating a reference clock is included in the electrical data transmission system;~~

supplying a clock synchronized with a selected reference clock, the selection being between the first reference clock recovered from the optical data transmission system, and the second reference clock recovered from the electrical data transmission system, wherein the selection is determined based on which of the optical data transmission system and the electrical data transmission system includes a designated master apparatus;

converting a ~~binary~~ an optical digital signal input from the optical data transmission system into a multi-level electrical ~~analog~~ signal synchronized with the supplied ~~recovered~~ clock, and outputting the electrical signal to the electrical data transmission system;

synchronizing ~~causing~~ a multi-level electrical analog signal received ~~input~~ from the electrical data transmission system ~~to synchronize~~ with the ~~recovered~~ supplied clock, and outputting the electrical signal to the electrical data transmission system until completion of initialization of the apparatuses included in ~~composing~~ the electrical data transmission system; and

converting a multi-level electrical ~~analog~~ signal input from the electrical data transmission system into a ~~binary~~ an optical digital signal synchronized with the ~~recovered~~ supplied clock, and outputting the optical signal to the optical data transmission system after completion of the initialization of the apparatuses ~~composing~~ included in the electrical data transmission system.